POST MASTECTOMY BREAST RECONSTRUCTION

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The Tamil Nadu Dr. M.G.R. Medical University

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for the award of the degree of

M.Ch. (Plastic Surgery) – Branch III

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DECLARATION

I solemnly declare that this dissertation "post mastectomy breast reconstruction" was prepared by me in the Department of Plastic, Reconstructive and Maxillofacial Surgery, Madras Medical College and Government General Hospital, Chennai under the guidance of Professor & HOD Department of Plastic, Reconstructive and Maxillofacial Surgery, Madras Medical College and Government General Hospital, Chennai between July 2006 to April 2009.

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Place: Chennai

Date:

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CONTENTS

INTRODUCTION

Breast reconstruction after mastectomy has evolved over the last century to be an integral component in the therapy for patients with breast cancer. Breast reconstruction originally was designed to reduce post mastectomy complications and to correct chest wall deformity, but its value has been recognized to extend past this limited view of use. The goals for patients undergoing reconstruction are to correct the anatomic defect and to restore form and breast symmetry. The surgical options for breast reconstruction involve the use of endoprostheses (implants), autogenous tissue transfers, or a combination of both.

In post mastectomy patients, the body image may result in negative psychological consequences. Replacement of the breast restores the self-image that may be lost as a consequence of mastectomy. Reconstruction of the breast mound has consistently improved with multiple techniques that are selected on the basis of the extent of the defect and the patient's and surgeon's preferences.

The optimal timing of breast reconstruction is controversial; Patients also suffer a distortion particularly when postoperative radiotherapy is likely to be required. Immediate breast reconstruction, which has been demonstrated to be oncologically safe, spares the patient from the psychological trauma of waking from the mastectomy operation without a breast mound and allows fewer hospital admissions and anesthetics. Furthermore, the cosmetic outcome of immediate reconstruction may be superior to delayed reconstruction. Within the last 30 years the technical emphasis has focused on the use of tissue expanders with implants, latissimus dorsi myocutaneous transfer, and the transverse rectus abdominis myocutaneous (TRAM) flap and free flaps to achieve adequate breast restoration. Although all of these methods are individually sufficient for reconstruction, surgical feasibility and patient preference dictate their use.

Reconstruction with the latissimus dorsi myocutaneous flap produces a breast with ptosis and projection while maintaining the natural consistency and feel of normal tissue. This flap provides ample bulk for reconstruction due to the large surface of the muscle. In many patients, the flap can be used without the use of an implant, restoring volumes of up to 1.5 L in large patients or with the use of modified techniques. It restores the anterior chest wall with healthy tissue,

particularly of benefit in patients who previously have undergone irradiation. The flap also provides tropic stimulation to the surrounding tissues without increased disease morbidity or interference with mammographic evaluation.

Within the last 30 years the technical emphasis has focused on the use of tissue expanders with implants, latissimus dorsi myocutaneous transfer, and the transverse rectus abdominis myocutaneous (TRAM) flap to achieve adequate breast restoration. Although all of these methods are individually sufficient for reconstruction, surgical preference is based on patient's condition, stage of the disease, option of the surgeon and the patient option.

AIM OF THE STUDY

The aim of this study is to explain the advantages of immediate post mastectomy reconstruction of breast to the patients and convince them for the same as they are not aware of such procedures in government setup.

Also to evaluate the reliability of various flaps in post mastectomy breast reconstruction.

To setup a surgical protocol depending on the disease status, patient physical condition and reliability of the flaps.

REVIEW OF LITERATURE

Iginio Tansini first used the technique of transfer of the latissimus dorsi muscle on its anterior arc of rotation in 1897. This Italian surgeon presented his novel concept for the coverage of chest wall defects that resulted from breast amputation as it was performed during this period. The latissimus dorsi muscle flap and overlying skin were rotated anteriorly about the axillary insertion. Later, in 1912, Stefano d'Este performed a version of this procedure described by Tansini for reconstruction of the mastectomy defect .

In 1936, Hutchins went into extensive detail of his use of the latissimus dorsi for prevention of lymph edema that occurred after mastectomy. He hypothesized that the ipsilateral arm and chest morbidity was due to the destruction of the axillary lymphatics and subsequent scarring that occurred after removing the pectoralis major and minor. Therefore, by re-establishing the axillary lymphatic framework imparted by these muscles with the transfer of the latissimus dorsi, he found that lymph edema could be attenuated. The latissimus dorsi was believed to be a mirror image of the pectoralis muscles, and it could serve to mimic the soft tissue defect left after removal of these structures. Hutchins described 12 successful cases in his report, in which he also noted that the latissimus dorsi transfer was useful in preventing edema while concurrently providing a healthy base for skin grafts and laying the foundation for reconstruction of the breast using transposed abdominal fat grafts.

Davis in 1949 and Darrell Campbell in 1950 made use of the flap for correction of anterior thoracic wall defects. Davis reconstructed a 30 x 14-cm defect created after resection of rib chondrosarcoma. The lesion, which extended from the mid axillary

line to the sternum and spanned the fourth to seventh ribs, was covered using a fascia lata graft and an overlying pedicle graft from the anterior portion of the latissimus muscle.

Around the same time, Campbell included the use of the latissimus dorsi anterior pedicle in a description of a procedure for repair of thoracic wall lesions that were the result of surgical extirpation of locally invasive malignancy. In his procedure, he also used a fascia lata graft with latissimus dorsi, which subsequently was covered by a split-thickness skin graft. The experience of both surgeons corroborated Hutchins' findings that the latissimus dorsi anterior pedicle muscle flap was a reliable flap that provided protection and elasticity to the chest wall as well as adequate nutrition to adjacent structures.

In 1974, Brantigan published the results of 10 years of experience using the same procedure. Brantigan treated 22 patients using the Hutchins modification of the radical mastectomy and reported excellent cosmetic results vis-à-vis the typical radical mastectomy. He also demonstrated the use of this flap in covering more extensive resections involving the internal mammary lymph chain, giving the surgeon the security of having mobile tissue between the pleura and skin.

The work done in the late 1970s presaged the contemporary use of the latissimus dorsi flap for breast reconstruction. With the understanding of the vascular connections to the skin provided by the underlying muscle and the idea of a myocutaneous flap proposed by McCraw in 1977, the use of the latissimus dorsi was expanded to include the overlying skin island. William Schneider reported successful transfer of the muscle and skin combination. He found the latissimus dorsi myocutaneous flap particularly useful for restoration of breast volume, replacement reconstruction after mastectomy in patients with radiation damage to the skin and chest wall of the lost subclavicular contour once provided by the pectoralis major muscle, and restoration of deficient

skin following mastectomy. Olivari, in 1976, and Muhlbauer and Olbrisch, in 1977, further exploited the latissimus dorsi myocutaneous flap for breast

In1976, Millard described a tubed lower abdominal pedicled flap for reconstruction of breast. Following Mathes' initial description of vascular anatomy and use of the rectus abdominis musculo cutaneous flap for abdominal wall reconstruction, Robbins described a vertical rectus abdominis flap for breast reconstruction.

The TRAM flap is considered to be the first choice in autogenous breast reconstruction today. The original TRAM flap which was first described by a plastic surgeon from Atlanta, Carl Hartrampf Jr., is the TRAM pedicled flap based on a single rectus abdominis muscle. In the TRAM pedicled flap, the skin and tissue remain attached to the vertically oriented rectus abdominis muscle and are supplied with blood from blood vessels that traverse that muscle. The rectus abdominis muscle, in turn, is supplied with blood from the superior epigastric artery and vein, blood vessels that enter the muscle from under the ribcage and course through the muscle and into the flap. Provided that these blood vessels remain intact, the amount of blood received by the flap is usually enough to keep approximately two thirds of the tissue area alive and available for use in reconstructing the breast.

The deep inferior epigastric perforator (DIEP) flap, a surgical techniques which is continuously being refined, in order to improve patient safety, reduce operative time and improve flap reliability. Due to the significant variation in vascular anatomy of the abdominal wall, precise preoperative mapping of the perforating vessels would be invaluable in the planning for flap reconstruction. Furthermore, it would reduce intra operative decision-making (such as deciding which perforator to use) potentially contributing to a significant reduction in operative time. For example, if there is a long intra-muscular course, it is preferable to perform a muscle-sparing transverse rectus abdominis musculocutaneous (TRAM) flap (MS-2), rather than a DIEP flap. This is because, the extensive muscular dissection required in this situation offsets any advantages of a DIEP flap. It follows that accurate preoperative decision-making on the mostly appropriate abdominal flap for a particular patient should result in faster operative times, improve patient safety and flap reliability.

With the incorporation of microsurgery in breast reconstruction, refinements in this flap have produced a free flap with a robust blood supply, less muscle and fascia harvest, and success rates approaching 100%.

Unfortunately, not all patients are candidates for free TRAM flap. Previous use of the TRAM flap, TRAM failure, or previous surgery preventing harvesting of the flap has led to the development of other methods of autogenous reconstruction with free tissue transfer.

Depending upon the patient's body habitus, one or more of these distant flaps can provide the amount of skin and soft tissue needed.

For these difficult situations, the reconstructive surgeon must have a working knowledge of these flaps.

The history of different types of flaps is as follows:

Superior gluteal free flap

- In 1976, Fujino first described the superior gluteal myocutaneous free flap for breast reconstruction.

Inferior gluteal free flap

- In 1978, LeQuang performed the first breast reconstruction with an inferior gluteal free flap.

Lateral transverse thigh free flap

- The lateral transverse thigh free flap (LTTF) is a horizontal variant of the vertical tensor fascia lata myocutaneous free flap.
- Designed by Elliott in 1989, the LTTF is based on cadaver studies of ink injections into the lateral circumflex femoral artery.

Latissimus flap

- In the late 1970s, the latissimus flap was the most popular form of autogenous tissue breast reconstruction.
- Used as a pedicled flap based on the thoracodorsal vessels, the flap is versatile and reliable. However, for most breast reconstructions performed today, the latissimus dorsi flap is used in conjunction with an implant to achieve adequate breast volume and projection.

MATERIALS AND METHODS

The study was conducted in the Department of Plastic Surgery, Government General Hospital, and Madras Medical College over a period of 33 months July 2006 to April 2009. All cases of post mastectomy breast reconstruction were included in the study. The proforma for the collection of data was made. All the relevant details of the patient during preoperative, surgical, and postoperative and follow up periods were collected and analyzed. All patients in addition to routine investigation were submitted to Doppler examination of the vascular pedicle near the flap donor site.

Patient selection:

Inclusion criteria:

Post-excision defects in patients with breast malignancies.

Women more than 30 yrs of age with palpable breast lump.

Women with sonographically detected solid lesions.

The above patients with FNAC or biopsy proved breast carcinoma.

Exclusion criteria:

1. Infected wound.
2. Patients with peripheral vascular diseases.
3. Irradiated patients.
4. Patients who cannot withstand prolonged anesthesia.

Exclusion Criteria

Patients with Stage III, IV excluded. Patients with co-morbid illness in Stage I, II excluded. Also small breasts with tumors and those presenting with multicentricity was also excluded from primary reconstruction.

Delayed reconstruction group of patients included where those patient with early breast carcinoma (Stage I, II); who had completed chemotherapy or completed both chemoradiation therapy. Patients with Stage III, IV excluded. Patients with higher grade tumor in I & II excluded.

Data Sheet was prepared to facilitate the collection of data of all demographic details of patients which includes the parameters like name, age, clinical diagnosis, investigations and staging of the diseases.

Data Sheet included type of surgery, type of flap, duration, post operative complications. All clinical investigations taken into account where recorded. Post operatively with the pathological report, patient was sent for chemotherapy or chemoradiation. Follow up period of all patients averaged to 18-30 months.

Procedure:

- All cases of stage I & II breast carcinoma were assessed for MRM and flap cover,
- MRM done with axillary clearance done and haemostasis secured.
- Resultant defect measured.
- Flaps planned according to the size of the defect, age and general condition of the patient.
- LD/TRAM/DIEP flap done and inset given.
- Suction drain kept and dressing done

.

All patients were retained in Plastic surgery ward until the flap had healed. Patients with good general condition were then discharged and reviewed twice a week – if the patient lived nearby to the hospital – or once weekly – if the patients were from a longer distance. Follow up period varied with individual complaints.

Statistical Analysis:

Data will be analyzed using the statistical package at periodic intervals and at the end of study.

ANATOMY

The adult female breast or mammary gland lies in the subcutaneous tissue (superficial fascia) of the anterior thoracic wall. Despite individual variations in size, the extent of the base of the breast is fairly constant from near the midline to near the mid axillary line and from the second to the sixth ribs. It overlies pectoralis major overlapping on to serratus anterior and to a small part of the rectus sheath and external oblique muscle. A small part of the upper outer quadrant may extend laterally to form the axillary tail. It lies in the medial wall of the axilla and may be a discrete mass poorly connected with the duct system. Usually it lies in the subcutaneous fat, which is condensed around it; rarely it may penetrate the deep fascia of the axillary floor and so lie adjacent to some axillary lymph nodes.

Some 15-20 lactiferous ducts converge in a radial direction to open on the nipple the projection just below the centre of the breast which is surrounded by an area of pigmented skin, the, areola. Some large sebaceous glands under the areola (areolar glands) may form small elevations (tubercles of Montgomery).

Blood supply

This is derived mainly from the lateral thoracic artery by branches that curl around the border of pectoralis major and by other branches that pierce the muscle. The internal thoracic artery also sends branches through the intercostal spaces beside the sternum; those of the second and third spaces are the largest. Similar but small perforating branches arise from the intercostal arteries the space superficial to pectoralis major is relatively bloodless. Pectoral branches of the thoracoacromial artery supply the upper part of the breast. The various supplying vessels form an anastomosing

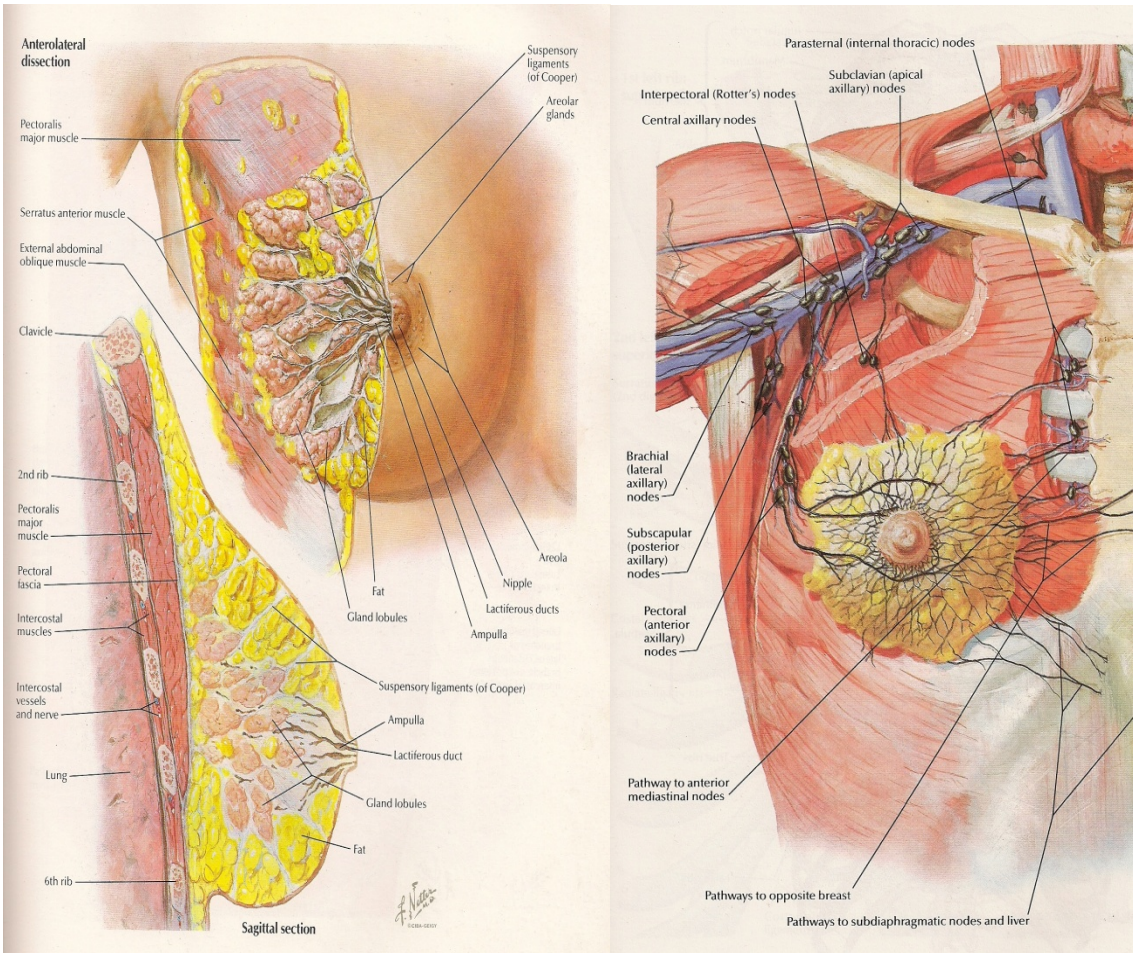
network. Venous drainage is mainly by deep veins that run with the main arteries to internal thoracic and axillary veins. Some drainage to posterior intercostal veins is an important link to vertebral veins and hence a pathway for metastatic spread to bone. Superficial veins may anastomose across the midline.

Lymph drainage

This is of the utmost importance in connection with the spread of malignant disease. From numerous lymphatic capillaries in the breast substance and the overlying skin, lymph from the lateral part of the breast (upper and lower outer quadrants) drains to axillary and infraclavicular nodes while from the medial part (upper and lower inner quadrants) it drains through the intercostal spaces into internal thoracic (parasternal) nodes. The lateral part draining laterally and the medial part medially, but it is important to note that there can be lymph flow between the lateral and medial parts of the breast and vice versa, possibly aided by the pressure of clothing or the examiner's hand. Some nodes may be embedded within breast tissue in the upper outer quadrant, and some may lie between pectoralis major and minor. There are no valves in the intramammary channels. Most lymph drains to the axilla; some of the internal thoracic nodes, which are mainly in the first three interspaces within 3 cm of the sternal margin, are very small and may easily be missed. Superficial lymphatics may cross the midline.

Nerve supply

The overlying skin is supplied by the cutaneous branches of intercostal nerves T4 to T6. Sympathetic fibres supply the blood vessels and glands, but the control of lactation is hormonal.


Anterolateral dissection
Suspensory ligaments (of Cooper)
Areolar glands
Pectoralis major muscle
Serratus anterior muscle
External abdominal oblique muscle
Clavicle
2nd rib
Pectoralis major muscle
Pectoral fascia
Intercostal muscles
Intercostal vessels and nerve
Lung
6th rib
Areola
Nipple
Lactiferous ducts
Ampulla
Fat
Gland lobules
Suspensory ligaments (of Cooper)
Ampulla
Lactiferous duct
Gland lobules
Fat
Sagittal section
Parasternal (internal thoracic) nodes
Subclavian (apical axillary) nodes
Interpectoral (Rotter's) nodes
Central axillary nodes
Brachial (lateral axillary) nodes
Subscapular (posterior axillary) nodes
Pectoral (anterior axillary) nodes
Pathway to anterior mediastinal nodes
Pathways to opposite breast
Pathways to subdiaphragmatic nodes and liver

BREAST CANCER

Cancer of the breast is the second most common cancer in women, and the second leading cause of cancer death after lung cancer. The majority of women with breast cancer today is eligible for breast conservation therapy and receives some form of systemic adjuvant CT.

RISK FACTORS

There are several exogenous and endogenous risk factors identified which are as follows

- Age of female > 65years
- Gender
- Family history
- Reproductive history – Early menarche
  First birth after age of 30years
  Late menopause
- Benign breast disease – Atypical hyperplasia
  Lobular carcinoma in situ
- Personal history – Exogenous factors
  Dietary factors

Hereditary breast cancer accounts for 5 – 10% of cases and caused by the presence of BRCA gene mutation.

PATHOLOGY

A ductal element undergoes a sequence of premalignant stages as follows and turns into malignancy.

Normal breast → hyperplasia → atypical hyperplasia →ductal carcinoma in situ → invasive carcinoma.

1) Ductal carcinoma in situ:
   Cancer confined by the basement membrane of the ducts – presents as mammographic micro calcification. This occurs in varying propensity to progress to invasive cancer.
   Comedo DCIS – pleomorphic cells high grade nucleus and central areas of necrosis.
   Non – comedo DCIS – not as malignant as comedo DCIS. It is difficult to differentiate it from atypical hyperplasia.
2) Invasive ductal carcinoma:
   Majority of breast cancer.
   Appears as grey white irregular, speculated mass that is hard and gritty on section.
   No specific microscopic features.
   Recognized as invasive adenocarcinoma involving ductal elements.
3) Medullary carcinoma:
   Grossly soft and fleshy and accounts for 6% of invasive carcinoma.
   Large size and well circumscribed.
   Histopathologically, poorly differentiated nuclei and infiltration by lymphocytes – favorable prognosis.

4) Tubular carcinoma:
    2% of breast cancer.
    Small and found on mammography.
    Highly differentiated.
    Has excellent prognosis.
5) Mucous or colloid carcinoma:
    Well differentiated.
    Histology – nests of tumor cells surrounded by a mucinous matrix.
6) Lobular carcinoma in situ:
    Arises from the epithelium of the breast lobules.
    No radiologic or physical manifestation.
    Traditionally not regarded as malignancy.
    Takes 20years to turn to malignant in 20% of the cases.
7) Infilterating lobular carcinoma:
    Occurs in 5 – 15% of individuals.
    Similar prognosis as ductal carcinoma.
    Extensive infiltration without a tumor mass.
    No micro calcification.
    Difficult to detect in mammography.

STAGING

AMERICAN JOINT COMMITIEE ON CANCER TNM STAGING SYSTEM FOR BREAST CANCER

TNM Staging

Primary Tumor (T)

Definitions for classifying the primary tumor (T) are the same forctinlcal and for pathologic classification. If the measurement is made by the physical examination, the examiner uses the major headings (T1, T2, or T3). If other measurements, such as mammographic or pathologic measurements, are used, the subsets of TI can be used. Tumors should be measured to the nearest O. lcrn increment.

TX	Primary tumor cannot be assessed
TO	No evidence of primary tumor
Tis	Carcinoma in situ
Tis (DCIS)	Ductal carcinoma in situ
Tis (LClS)	Lobular carcinoma in situ
T1	Tumor 2 cm or less in greatest dimension
Tlmic	Microinvasion O. I cm or less in greatest dimension
Tla	Tumor more than O. I cm but not more than 0.5 cm in greatest dimension
Tlb	Tumor more than 0.5 cm but not more than I cm in greatest dimension
TIc	Tumor more than I cm but not more than 2 cm in greatest dimension
T2	Tumor more than 2 cm but not more than 5 cm in greatest dimension
T3	Tumor more than 5 cm in greatest dimension
T4	Tumor of any size with direct extension to (a) chest wall or (b) skin, only as described below
T4a	Extension to chest wall, not including pectoralis muscle
T4b	Edema (including peau d'orange) or ulceration of the skin of the breast or satellite skin nodules confined to the same breast
T4c	Both T4a and T4b
T4d	Inflammatory carcinoma

Regional Lymph Nodes (N)

NX	Regional lymph nodes cannot be assessed
NO	No regional lymph node metastasis
N1	Metastasis to movable ipsilateral axillary lymph node(s)
N2	Metastases in ipsilateral axillary lymph nodes fixed to one another (matted) or in clinically apparent ipsilateral internal mammary nodes in the absence of clinically evident axillary lymph node metastasis
N2a	Metastases in ipsilateral axillary lymph nodes fixed to one another (matted) or to other structures
N2b	Metastases only in clinically apparent ipsilateral internal mammary nodes and in the absence of clinically evident axillary lymph node metastasis
N3	Metastasis in ipsilateral infraclavicular lymph node(s). with or without axillary lymph node involvement, or in clinically apparent ipsilateral internal mammary lymph node(s) and in the presence of clinically evident axillary lymph node metastasis; or metastasis in ipsilateral supraclavicular lymph node(s). with or without axillary or internal mammary lymph node involvement
N3a	Metastasis in ipsilateral infraclavicular lymph node(s)
N3b	Metastasis in ipsilateral internal mammary lymph node(s) and axillary lymph node(s)
N3c	Metastasis in ipsilateral supraclavicular lymph node(s)

Distant Metastasis (M)

MX	Distant metastasis cannot be assessed
MO	No distant metastasis
M 1	Distant metastasis

Stage Grouping

Stage 0	Tis	NO	MO
Stage I	T1	NO	MO
Stage IIa	TO	N1	MO
	T1	Nl	MO
	T2	NO	MO
Stage IIb	T2	Nl	MO
	T3	NO	MO
Stage IIIa	TO	N2	MO
	T1	N2	MO
	T2	N2	MO
	T3	N1	MO
	T3	N2	MO
Stage IIIb	T4	NO	MO
	T4	N1	MO
	T4	N2	MO
Stage IIIC	Any T	N3	MO
Stage IV	Any T	Any N	M 1

Stage I & II	early breast cancer
Stage III	LABC – poor prognosis
	Rx – CT, surgery & RT

LOCOREGIONAL TREATMENT

GOALS 1) provide optimal local control

2) adequate disease staging

3) long term survival

4) presentation and restoration of body form

Total mastectomy and axillary dissection – MRM - is the standard treatment.

SPREAD lymphatic spread

Blood stream

Combined systemic therapy with more conservative locoregional treatment provides local disease control with prolonged survival.

TOTAL MASTECTOMY

MODIFIED RADICAL MASTECTOMY

- Removal of the entire breast NAC and skin overlying the tumor along with axillary lymph nodes is the most common treatment followed.
- Pectoralis major and minor are usually preserved.
- Skin sparing mastectomy preserves the inframammary fold and as much native skin is possible – used in our series of immediate breast reconstruction.

MANAGEMENT OF THE AXILLA

PROGNOSTIC MEDIATOR IN CANCER BREAST

1. Pathological staging
2. Control of regional disease

POTENTIAL COMPLICATIONS

1. Arm stiffness
2. Number
3. Lymphedema

Sentinal node biopsy identified and removal of lymph node is most likely to contain metastasis.
False negative – 0 to 11%

TREATMENT OF DCIS

Malignant potential of DCIS depends on

1. The size of tumor
2. Grade of tumor
3. Presence of comedo necrosis

- May progress to invasive carcinoma.
- Local recurrence after surgery excision alone is 30%
- Radiation therapy reduces local recurrence.
- Immediate post operative radiotherapy is dependant on the local tissue healing and type of tissue exposed for radiotherapy.
- Immediate breast reconstruction helps in post operative radiotherapy, which can be given at the earliest to avoid tumor spread after surgical healing.

Local recurrences depends on

- Nuclear grade
- Size
- Comedo histology
- Surgical margins

} Silverstein et al

- Tumor size
- Tumor grade
- Presence of comedo necrosis

} Van Nuys prognostic index

POST MASTECTOMY RADIOTHERAPY

- Reduces the risk of locoregional recurrences by approximately 67%
- But cardiac toxicity reduces the survival.
- Post operative radiotherapy is definitely indicated in patients with ≥4 LN positive
- Post implant chest wall irradiation increases the incidence of capsular contracture and implant exposure. Hence this was not done in our study.
- It also has a delirious effect on TRAM evidence by increased incidence of fibrosis, fat necrosis and revision surgery.
- Only a few cases in our study TRAM was done

Post operative necrosis – incidence – 10%

SYSTEMIC THERAPY

Adjuvant chemotherapy and hormonal therapy is used to eliminate occult metastasis responsible for local recurrences upto 30%

COMMONLY USED CHEMOTHERAPY

- CMF (cyclophosphamide, methotrexate, 5 fluorouracil)
- FAC (5 fluorouracil, doxorilicin, cyclophosphamide)
- AC (doxorilicin, cyclophosphamide)
- Taxanes (paclitaxel, docetaxel)
- Hormonal (tamoxifen – selective oestrogen receptor modulator) in oestrogen responsive tumor.
- Aromature inhibitors (anastrozole, latrozole) – blocks peripheral conversion of adrenal steroids to oestrogen.
- Hormonal therapy used in post menopausal and oestrogen responsive tumors.

NODE NEGATIVE TUMORS

Risk of local recurrences even in node negative tumors is 30%. Hence adjuvant therapy reduces recurrences and has beneficial effects even in node negative tumors. However, a low subset of patients with tumor < 1cm, histology with tubular, medullary, mucinous, which have excellent prognosis may be left without adjuvant therapy. In our study, as the patients come in late stage of disease, this possibility is ruled out.

NEOADJUVANT CHEMOTHERAPY

Pre operative chemotherapy is indicated in locally advanced disease and operable invasive carcinoma who may also have adjuvant chemotherapy. The goal is to shrink the tumor and permit breast conservation. Neoadjuvant chemotherapy shows significant tumor down staging with pathological complete response rate of 12 to 25%.

OPERATIVE TECHINIQUE

Autologous tissue reconstruction provides the patient with a reconstructed breast tissue with her own tissue obviating the potential complications associated with a prosthesis. The disadvantage being donor site scar and potential morbidity.

LATISSMUS DORSI FLAP:

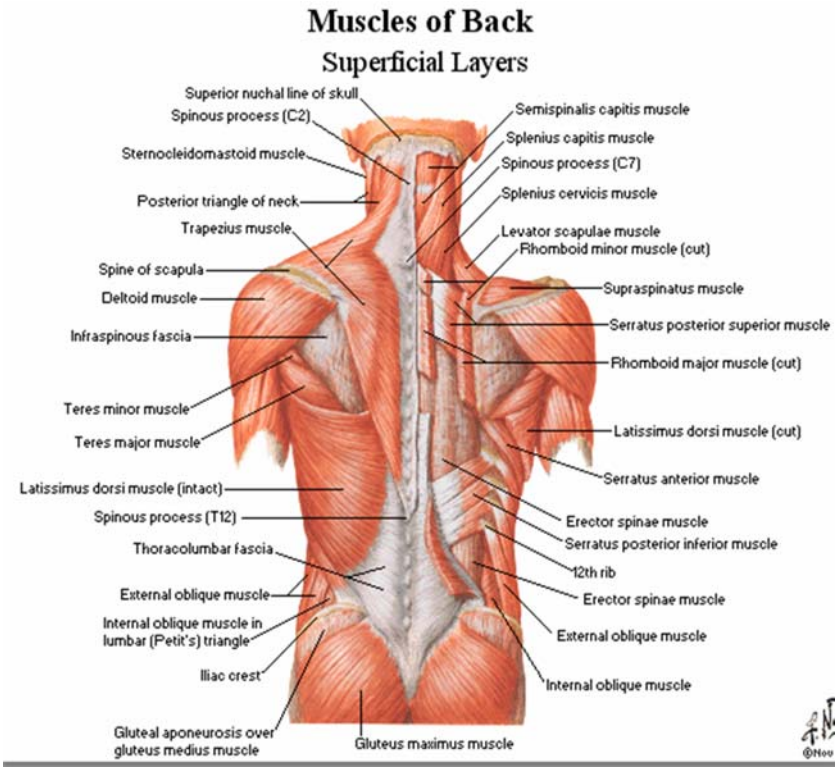
The latissimus dorsi myocutaneous flap is reliable and richly vascularised flap and the proximity if the flap to the chest wall makes it an ideal choice for providing muscle, fat and skin for use in reconstructing the breast after mastectomy. Sacrifice of the muscle creates a negligible functional deficit. By using implants under the flap the volume can be increased to restore the breast to its normal size and contour.

SURGICAL ANATOMY

Triangular muscle with surface area of 105-192sqcm (broadest of the back)

Arises from

- Spines of the lower six thoracic & supraspinatous ligament.
- Lumbar and sacral vertebra through thoraco-lumbar fascia.
- External lip of the crest of the ilium.
- Three or four lower ribs by fleshy digitations.
- Inferior angle of scapula.



- Lat & sup borders are free
- Superior fibers become at first posterior and then inferior
- Curves around the lower border of the Teres major
- Ends in a quadrilateral tendon and is inserted into the bottom of the inter-tubercular groove
- Functional resting length 15-22cm

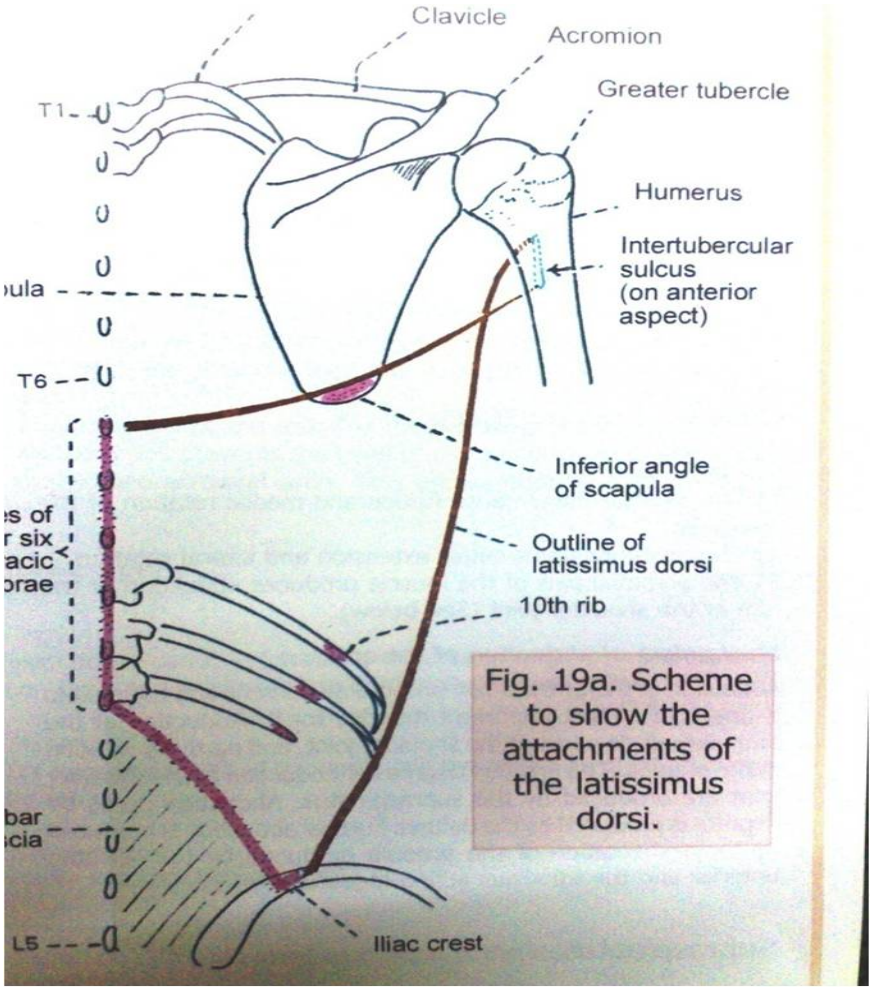


Fig. 19a. Scheme to show the attachments of the latissimus dorsi.

Arterial anatomy:

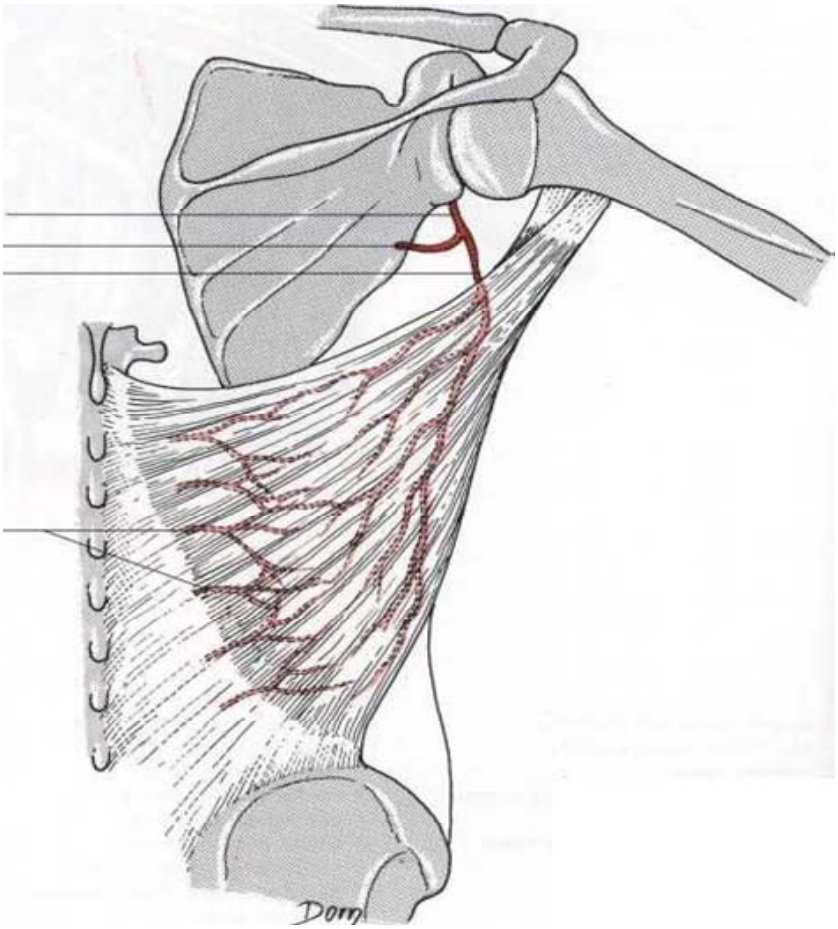
- Dominant supply

  - Thoracodorsal artery

- Secondary supply

  – Posterior intercostal artery & lumbar artery perforators.

- Can survive even if either pedicle is interrupted



Vascular supply

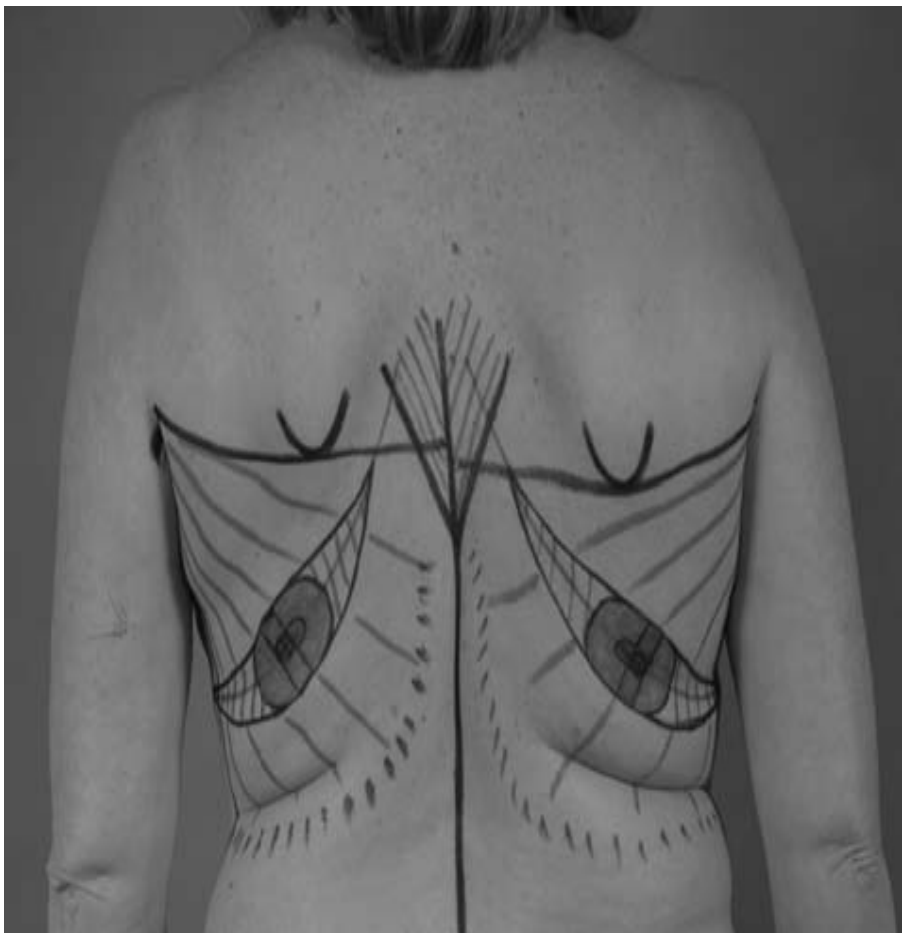
- Pedicle arises from the thoracodorsal vessels.
- Subscapular artery arises from axillary artery, divides into the circumflex scapular and thoracodorsal arteries.
- Before entering into the muscle, gives branches to serratus anterior & cutaneous branches
- Thoracodorsal artery enters at 8.5cm distal to subscapular origin & 2.5cm from lateral border. (D=2-3mm)
- Bifurcates into medial and larger lateral branches within the muscle
- Rich anastomoses dominant & segmental vessels
- Accompanying veins follow the arteries and drain into axillary vein

Nerves

- By the sixth, seventh, and eighth cervical nerves through the thoracodorsal (long subscapular) nerve.
- Cutaneous sensation by IC branches(2branches) & lateral branches of Post rami (3 branches)

Marking

- With the patient in the standing position
- The midline of the back is marked along with the tip of the scapula
- With the arm raised, the sweep of the superior border of the latissimus muscle can be drawn in as it courses over the tip of the scapula to the midline of the back.
- The anterior border of the muscle is identified and marked as it runs inferiorly from the posterior border of the axilla to the iliac crest.
- The center of the muscle is identified and the relaxed skin tension line, which passes through this point, is drawn
- A gentle ellipse is drawn around the circular skin island, tapering off medially and laterally so as to provide a smooth postoperative scar.
- Skin paddle in transverse or oblique.
- Maximum dimensions permitting direct closure is 30X12cm
- Arm abducted in 90*, NV hilus is marked midway between the insertion at the arm and the chest wall.
- Axillary artery palpated and a point 10cm inferior marked in the sulcus between LD and serratus anterior.



TRAM FLAP

INDICATIONS

Patients who require a flap and in whom the latissimus dorsi musculocutaneous flap is not available include the following:

(1) Those with a previous thoracotomy transecting latissimus muscle, those with congenital absence or severe atrophy of the muscle, those in whom the muscle was previously as a free flap, or those in whom a previous. Latissimus muscle flap failed.
(2) Those with a modified radical mastectomy in whom the inferior half of the pectoralis major muscle has been resected or denervated, resulting in by of that muscle
(3) Those in whom the pectoralis major muscle is completely intact but inadequate skin is, available to allow for adequate mound formation; and
(4) Who strongly prefer a donor-site scar on the anterior abdominal wall instead of the back.

ANATOMY

The rectus abdominis is a long, broad strap muscle, broader above and extending the full length of the anterior abdominal wall. It arises from the fifth, sixth, and seventh.
Costal cartilages above and inserts into the crest of the pubis below. It is separated from its fellow by the linea alba in the midline. Three tendinous intersections interrupt the muscle fibers; these are at the level of the umbilicus below, at the free end of the xyphoid process above, and midway between these two.

The rectus abdominis muscle is enclosed in the rectus sheath, which is formed by the splitting of the aponeurosis of the intemal oblique muscle. The sheath consists of an anterior and posterior lamina. The anterior lamina is reinforced by the aponeurosis of the external oblique muscle; and the posterior lamina is reinforced by the aponeurosis of the transversus abdominis muscle. This fascial arrangement exists from the costal margin above to a variable level below, usually midway between the umbilicus and the symphysis pubis. At this level, the posterior sheath ends in a curved margin called the arcuate line. This is particularly important in the restoration of abdominal wall integrity after raising the rectus abdominis muscle or musculo-cutaneous flap.

This muscle has a dual dominant blood supply, the upper vesselis the superior epigastric artery, one of the two terminal branches of the internal mammary artery. This descends in the space between the costal and xyphoid origins of the diaphragm and enters the rectus sheath at the upper medial extreme of the sheath and continues along the posterior surface of the muscle.

The lower vessel is the inferior epigastric artery that arises from the external iliac artery above the level of the inguinal ligament. It traverses upward and medially on the extraperitoneal tissues, where it perforates the transversalis fascia to pass anterior to the arcuate line and continues between the posterior rectus sheath and the rectus muscle. Within the muscle, these vessels divide into multiple terminal branches that communicate at the level of the umbilicus. Both being dominant vessels, either may be ligated and the
Muscle will survive.

The perforators to the skin overlying the rectus abdominis muscle are of the indirect type and traverse the rectus abdominis muscle to supply the overlying skin. These lie along the medial third above the level of arcuate line.

FLAP DESIGN AND DIMENSIONS

The flap may vary from 30cm long and 10 t0 15cm width depending on the requirements. The axis of rotation is the point of entry of the superior epigastric

artery into the rectus abdominus muscle at the subcostal. The arc of rotation is 0 to 180 degrees.

OPERATIVE TECHNIQUE

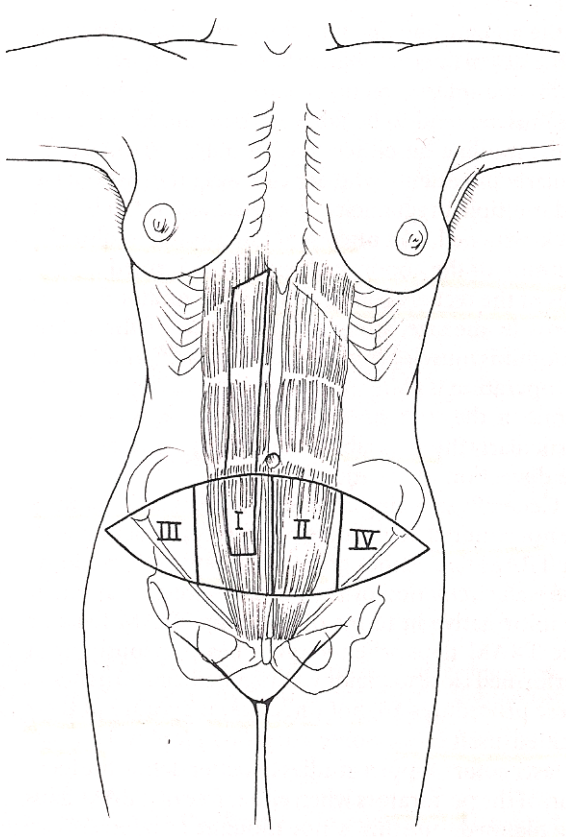
The skin is incised through subcutaneous tissue to expose the anterior rectus sheath. Sutures are inserted between the dermis and the anterior rectus sheath to prevent a shearing strain on the indirect perforator system. The anterior sheath is incised around the margins of the skin element, and superiorly, the anterior rectus sheath maybe the rectus abdominis muscle may be detached from the fifth, sixth, and seventh costal cartilages to facilitate rotation of the musculo-cutaneous island element. The distal end of the muscle is raised from the subjacent transversalis fascia, and the inferior epigastric vessels are located, transected, and ligated. The lower aspect of the rectus abdominis muscle is transected with cutting cautery about two to three fingerbreadths proximal to the pubic crest (Fig. 4B). The flap is then rotated into the required position (Fig. 4C and D).

Above the level of the arcuate line, the anterior rectus sheath is repaired by direct approximation with nonabsorbable sutures (Fig. 4E). Below the arcuate line, repair of the fascia is vital to prevent a postoperative hernia and may be performed, in most cases, by advancement of the medial free incised-in the midline, opening the sheath like the pages of a book .

The muscle is easily dissected from the subjacent posterior rectus sheath by sharp and blunt dissections. The muscle is. Raised to the subcostal margin .It is not necessary to expose the superior epigastric vessel that enters the muscle medially at the subcostal margin. The superior insertion of edge of the aponeurosis of the external oblique to the linea alba medially. This creates considerable tension that is released by a relaxing incision in the fascia of the external oblique far laterally. If the defect is too large, a free fascial graft of external oblique fascia harvested from the contra lateral side is sutured into position with nonabsorbable sutures under suitable tension. Marlex mesh may be used, but autogenous material is preferable.

COMPLICATIONS

Serious complications resulting from TRAM flap are fortunately rare. More common complications are sub divided into flap complications and donor site morbidity. Flap complications consist of total or partial flap necrosis or more commonly fat necrosis. If necrosis occur necrotic region debrided and primarily sutured or left to heal secondarily. Large areas debrided and closed primarily.
Abdominal wall complications include hernia,abdominal wall laxity,seroma, flap necrosis or wound dehiscence.



DEEP INFERIOR EPIGASTRIC ARTERY PERFORATOR FLAP

The DIEAP flap is based on musculocutaneous perforators from the deep inferior epigastric branch of the external iliac artery.

The DIEAP flap has become popular for breast reconstruction and is particularly indicated in physically active patients as well as in patients who are expecting to have children because of complete preservation of the rectus abdominis muscle.

Anatomy

Surface markings

The surface markings for the DIEAP flap are similar to those for the TRAM flap. There is a concentration of perforators in the periumbilical area and the majority of larger caliber perforators are found here. Because of the differences in relationship of the skin paddle of perforator flap to the underlying muscle, it is not necessarily constrained by the relationship of the skin to the underlying muscle. The skin paddle can theoretically be arranged in any direction around a given perforator. For breast reconstruction, however, the standard TRAM skin paddle is used. This provides optimal donor site scar placement.

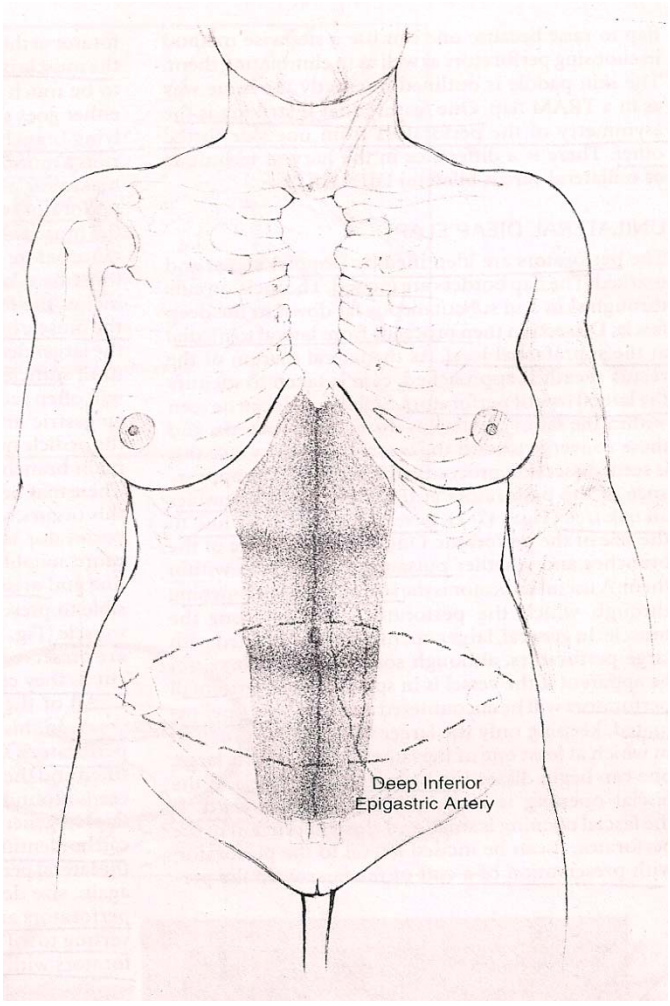
Vascular anatomy

The deep inferior epigastric artery originates has a single branch from external iliac artery and courses along the inferior surface of the rectus abdominis muscle, accompanied by two venae comitantes. It divides into medial and lateral branch at the level of middle third of the muscle. The lateral branches preferred dominant vascular pedicle for DIEAP flap. Preoperative evaluation of the vascular anatomy is helpful in identifying major perforators. Average pedicle length is 10cm and diameter is 3.6mm. there are about five periambulical perforators larger than 0.5mm with in 4cm radius around the umbilicus.

Surgical Technique

The skin markings are similar to those for a TRAM flap. Doppler examination of the perforators is performed once preparation and draping are complete. The position of the perforators is marked on both sides of the abdomen. This is a safe flap to raise because one can use a stepwise 'method in choosing perforators as well as in eliminating them. The skin paddle is outlined in exactly the same way as in a TRAM flap. One feature that is striking is the asymmetry of the perforator from one side to the other. The flap borders are incised. The incision cuts through skin and subcutaneous fat down to the deep fascia. Dissection then proceeds from lateral to medial at the suprafascial level. As the lateral margin of the rectus sheath is approached, care is taken to identify the lateral row of perforators. Small vessels can be seen within the fat of the flap as dissection proceeds, and these converge toward the vessel of origin. Once this is seen, dissection proceeds with caution. The appearance of the perforators at this stage often resembles an oak tree. Several features give clues to the size of the perforator. One is the actual size of the branches and whether pulsation can be seen within them. A useful indicator is the size of the fascial opening through which the perforator emerges from the muscle. Very small perforators will be encountered and these can be eliminated. Large perforator is identified and dissection proceeds by incising the fascia with preservation of a cuff of fascia around the perforator. The course of the perforator within the muscle is variable. it either goes straight through the muscle to the _ lying branch of the deep inferior epigastric artery or

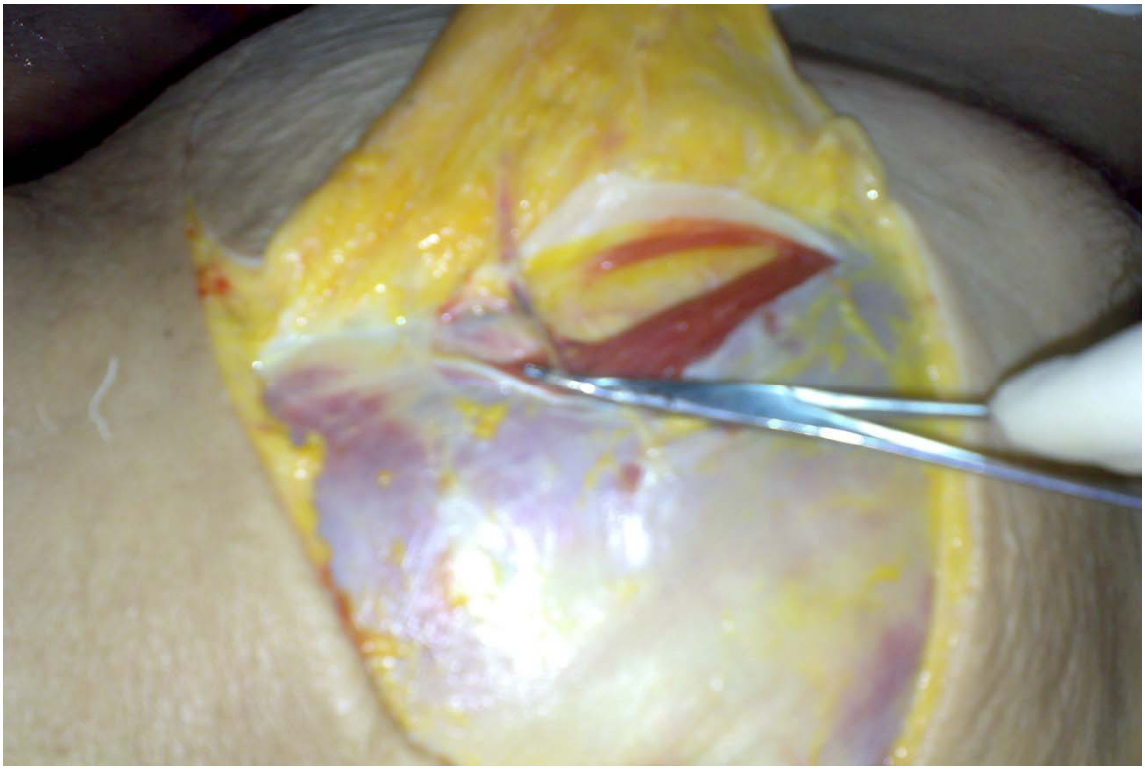
runs a more oblique course through the muscle or along the surface of the muscle directly under the fascia for a distance before entering the muscle. Once the larger deeper vessel is reached, dissection proceeds until sufficient length and calibre is achieved. Donor area muscle is preserved. The incised fascia is closed and skin is closed primarily.



CADEVERIC DISSECTiON

With the help of Anatomy and Forensic department six cadaveric dissection was done for DIEAP flap. It was found that in all the cadavers the average pedicle length and diameter of 10 cm and 3.6mm reapectively. There were 5 to 6 periumblical perforators within a 4cm radius, arising from medial and lateral row of perforators. The lateral row perforators were larger than the medial row ranging from 0.4 to 0.5mm. this corresponds to the study don by El-Mrakby and Milner.

DIEP CADAVER DISSECTION

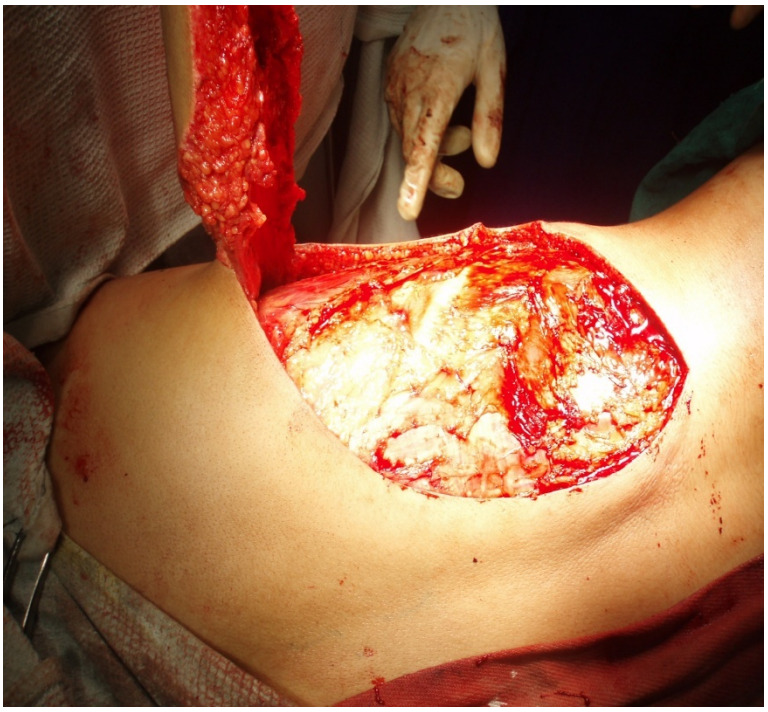


EARLY BREAST CARCINOMA

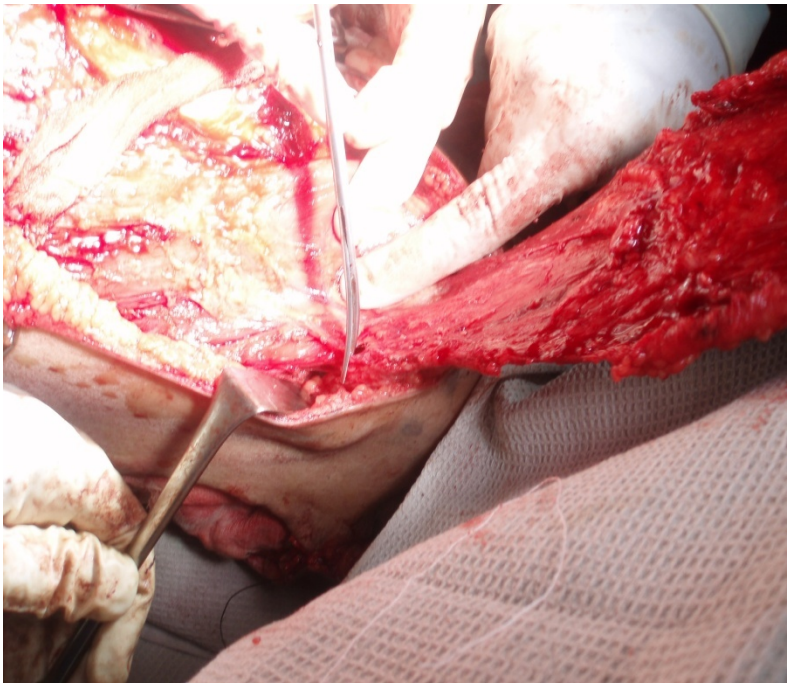
POSITION

FLAP HARVEST

FLAP HARVEST



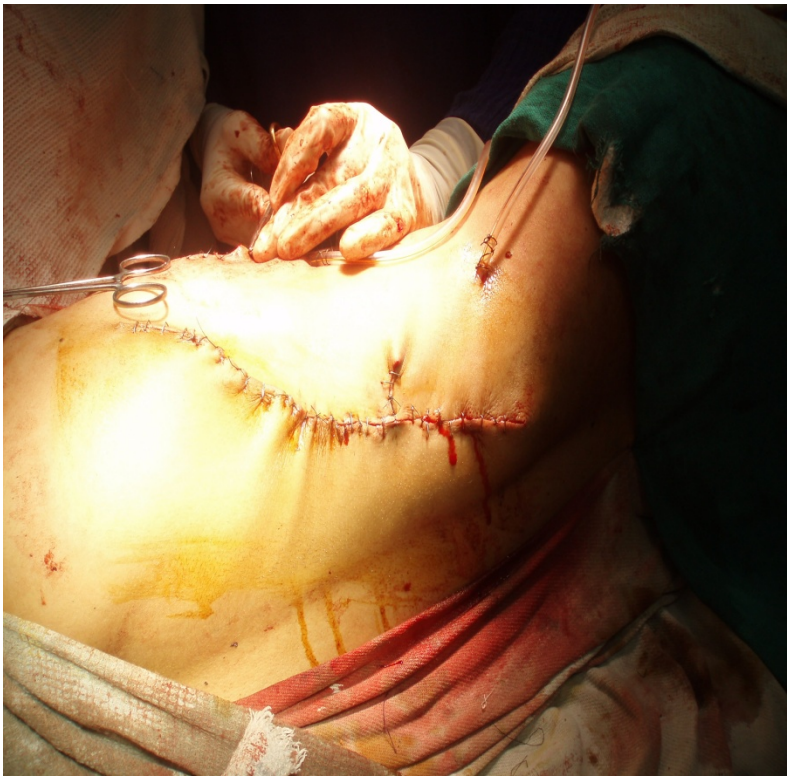
VASCULAR PEDICLE



FLAP INSET

FLAP FIXATION IN THE MASTECTOMY DEFECT

DONOR SITE



IMMEDIATE POSTOPERATIVE

5TH POST OPERATIVE DAY

AFTER SUTURE REMOVAL

DONOR SITE

DONOR SITE CONCEALED IN DRESSING

REVIEW AFTER 1 MONTH, SYMMETRICAL AND PTOTIC

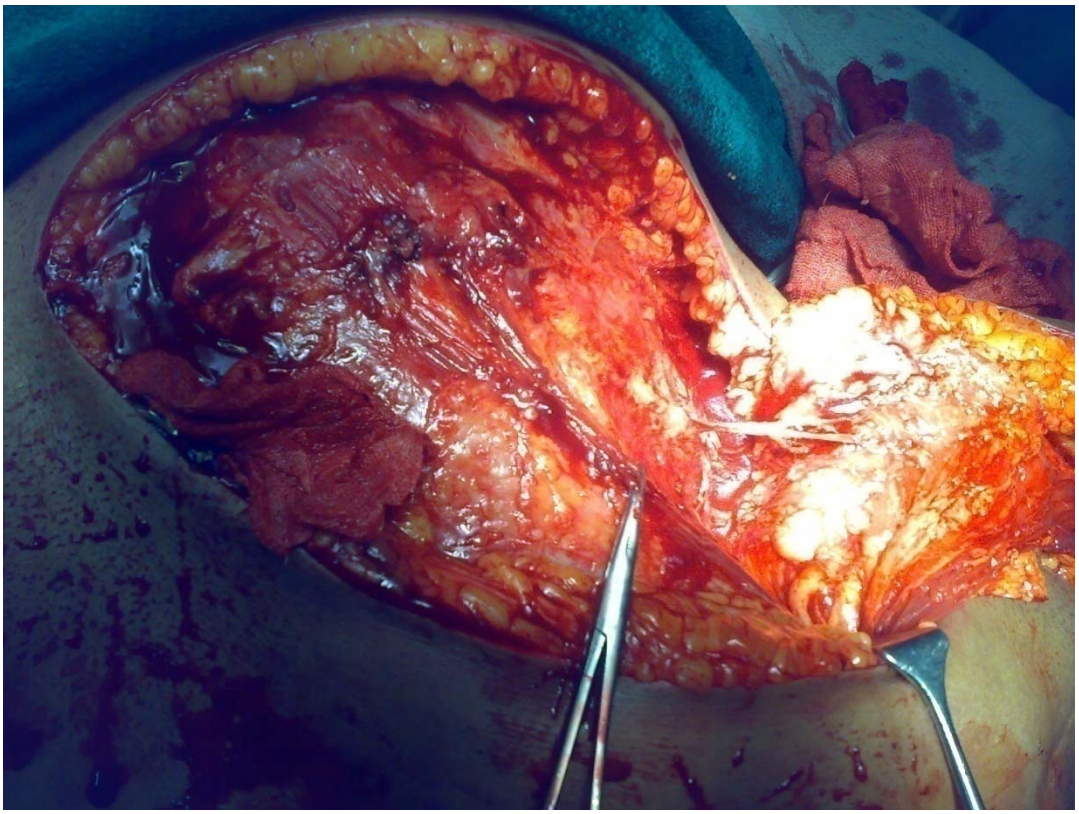
TRAM FLAP

FOLLOW UP OF IMMEDIATE RECONSTRUCTION

PARTIAL FLAP NECROSIS

DONOR SITE NECROSIS

DIEAP FLAP



OTHER OPTIONS FOR AUTOLOGOUS BREAST RECONSTRUCTION

When autologous breast reconstruction is desired but the TRAM and latissimus flaps are not available, other flaps have been described for postmastectomy reconstruction. The free gluteal flap has been used for breast reconstruction as a myocutaneous flap based on either the inferior or the superior vessels. Because of the technical complexity of the procedure and complications, including sciatica, seroma, unfavorable scar location, and asymmetrical buttock contour, this option is a secondary choice for breast reconstruction. The vascular pedicle is quite short, requiring either vein interposition or removal of costochondral cartilage to permit anastomosis to the internal mammary vessels.

The Rubens flap is based on the circumflex iliac vessels. This option is most applicable for women who have an excess of soft tissue over the hips, as accentuated in women painted by Rubens during the Renaissance. The flap is elevated with a full thickness of tissue over the hip and underlying musculature including the oblique and transverse muscles. Because this reconstructive procedure is limited in bulk and skin envelope and often requires a balancing procedure on the contralateral hip, it is not usually considered as a first option.

NIPPLE AREOLA RECONSTRUCTION

The first stage of breast reconstruction centers solely on reconstruction of the breast mound. For some patients, merely having a breast mound is all the reconstruction that they desire. They are able to appear symmetrical in their clothes, including bathing suits. If patients desire nipple-areola complex reconstruction, it is performed as a second stage. If the patient is to receive adjuvant chemotherapy or radiation therapy, most surgeons prefer to wait until after that is completed. Changes in breast mound shape and position on the chest wall are expected after surgery and in response to radiation. Therefore, proper position of the nipple may not be able to be determined until 2 to 3 months after the initial surgery.

The nipple is created from local flaps on the breast mound Numerous different techniques have been described, but all have similar limitations. Within 12 months, most undergo at least a 50% reduction. Therefore, at the initial surgery, the nipple should be made larger than desired. The pigmented areola was originally reconstructed with split-thickness skin grafts from the hyperpigmented upper medial thigh, labia majora, or retroauricular regions. This has been replaced with medical tattooing. pigment is matched to the native nipple areola from the other side. Tattooing is performed 3 to 6 weeks after nipple creation. In most cases, the pigment fades over time and should be tattooed darker than desired. Because of

areolar tattoo fading and nipple flap flattening, others have attempted cryopreservation of the nipple, which has only produced mediocre results, owing to injury to the tissues with the freezing process. Also, as mentioned earlier, preservation of the nipple-areolar complex poses an oncologic risks.

ADVANTAGES OF IMMEDIATE BREAST RECONSTRUCTION

There are four incentives for immediate breast reconstruction including decreased psychosocial morbidity, superior cosmetic results, decreased surgical morbidity and lower cost.

Psychosocial Benefits [9]

The benefit to psychosocial health is perhaps the prime incentive for immediate post- mastectomy breast reconstruction. In the past, many believed that delayed reconstruction was better because patients would be more appreciative if forced to live for some time with a flat chest wall. This concept is now considered obsolete, and many women regard this attitude as evidence of a lack of concern for the psychologic impact of mastectomy.Women who undergo immediate reconstruction

tend to accept the new breast as an integrated part of their bodies and demonstrate reduced psychosocial morbidity.[19] They have significantly less "distress" in recalling the surgery are less likely to be "repulsed" by their own naked appearance and have more freedom to dress than women who do not have reconstruction. It is difficult to demonstrate a difference in psychologic impact between the various reconstructive techniques, but it is reasonable to believe that patients will score higher if the reconstructed breast is a true representation of the appearance and texture of their natural breast. Compared with breast conservation (i.e., "lumpectomy" and radiation), mastectomy and immediate reconstruction yield similar psychosocial outcomes. There is no measurable difference in overall psychosocial adjustment to illness or satisfaction with relationships or sexual life, but there is a specific advantage of breast conservation over breast reconstruction in maintaining pleasure and frequency of breast caressing during sexual activity. Body image can be adversely affected by the additional scarring associated with reconstructive surgery, but the overall psychologic morbidity seems to be the same as with breast preservation. Thus, immediate breast reconstruction offers clear psychologic benefits compared with delayed reconstruction and it compares favorably to breast conservation therapy in psychosocial outcome.

Cosmetic Benefits

Immediate breast reconstruction clearly yields superior cosmetic results compared with delayed reconstruction. There are two reasons for this. The natural tissues that remain after the mastectomy are unaffected by soft-tissue contraction and scar. The inframammary fold and other important landmarks that determine the unique shape of each woman's breast are preserved. Retained portions of the breast skin envelope tend to assume a natural shape and symmetry when breast volume is restored. As a result, the reconstructed breast can assume the shape of the patient's native breast.

Reduced Morbidity

Immediate reconstruction combines the ablative surgery and reconstruction into a single stage, with obvious advantages for the patient. There is lower anesthetic risk with one rather than two episodes of general anesthesia. There is

less inconvenience and time away from family or work because of only one hospitalization and period of convalescence for which to prepare.

The aesthetic results in immediate reconstruction generally are superior, there tend to be fewer operations for secondary revision of the reconstructed breast and remedial surgery on the opposite breast.

CONTROVERSIES IN IMMEDIATE BREAST RECONSTRUCTION

Is Immediate Reconstruction Oncologically Safe?[48]

Women who undergo immediate postmastectomy reconstruction have similar survival, as do the patients who do not have reconstruction. Nevertheless, immediate breast reconstruction raises three important safety issues: (1) Do complications of reconstructive surgery interfere with adjuvant tumour therapies? (2) Does skin-sparing mastectomy technique lead to increased local tumor recurrence? (3) Will the reconstructed breast conceal tumor and prevent detection of local recurrence?

Administration of adjuvant therapy is not delayed in patients who undergo immediate breast reconstruction. The usual time from surgery until initiation of adjuvant chemotherapy or radiation is 14 to 21 days. This is ample time for patients to recover from the additional surgery required for immediate breast reconstruction. Immediate reconstruction does not have significantly more complications that delay adjuvant therapy, than does mastectomy alone and breast skin flap necrosis is not increased if the skin-sparing technique is used properly. Significant additional morbidity with delay of chemotherapy has not been seen with either breast implants or tissue flaps. Forouhi and co-workers found obesity, but not immediate reconstruction to be a significant risk factor for postoperative complications that might delay adjuvant therapy. Similarly, Furey found no delay in adjuvant therapy because of wound complications and that the frequency of wound complications was not increased in patients, receiving adjuvant

chemotherapy. The author's experience agrees with these reports. Immediate breast reconstruction does not compromise adjuvant cancer therapy.

What is the Effect of Adjuvant Therapies on the Reconstructive Outcome? [49]

Adjuvant therapies are various regimens of radiation and chemotherapy given in the absence of evidence of persistent disease after mastectomy. These therapies may be administered both before and after the mastectomy to reduce the risk of occult distant metastasis. Neoadjuvant chemotherapy (i.e., given before surgery to reduce tumor size and assess drug efficacy) has not been shown to cause additional morbidity in immediate breast reconstruction. Adjuvant chemotherapy also has not been shown to be detrimental to reconstructive outcome. Radiotherapy is designed to reduce the incidence of local recurrence, ultimately a uniformly fatal event. Therapy can be delivered to a reconstructed breast when indicated without difficulty. In patients when reconstruction is done with implants, however, radiation significantly worsens the outcome. Expanding irradiated tissues is more difficult and painful, and the final reconstructed breast is often too small and hard without natural ptosis. TRAM flaps tend to tolerate irradiation well.

COMPLICATION RATES OF AUTOGENOUS AND NONAUTOGENOUS METHODS

(Trabulsy; Mathes SJ – Plast Recon. Surg. 1994;93 1418-1427)

	Group – I 1979-1983		Group – III 1988-1991	
	Major	Minor	Major	Minor
NONAUTOGENOUS	N=133		N=111	
Implants	2(5%)	9(22.5%)	1(6%)	3(18%)
Tissue Expansion	0(0%)	3(75%)	1(1)	14(17%)
Latissimus dorsi with implant	1(1%)	15(18%)	0(0%)	2(17%)
Abdominal advance with implant	0(0%)	2(33%)	0(0%)	0(0%)
Total	3(2%)	29(21%)	2(2%)	19(17%)
AUTOGENOUS	n=20		n=65	
TRAM	1(5%)	4(20%)	1(2%)	8(15%)
Free Flap			1(1%)	3(25%)
Total	1(5%)	4(20%)	2(3%)	11(17%)

This study concludes that autogenous transplant has less morbidity.

PARTIAL AND TOTAL FLAP LOSS FOR AUTOLOGOUS RECONSTRUCTION

Author, Year	No of Cases	Technique	Partial or Total Flap loss Incidence
Hartrampf, 1987	383	Pedicled TRAM flap reconstruction	Partial, 6% Total, 0.3%
Menke, 2001	121	LD flap + implant	Partial, 1.7% Total 0%
Roy, 1998	111	LD flap + implant (95%)	4% Skin and Fat Loss
Chang, 2002	75	Extended LD flap without implant	Partial, 5.3% Total 0%
Kroll, 1991	302	TAM Flap, LD flap, E/1	Any: 19.5% (includes mastectomy flap necrosis): 10.6% required revision.

INCIDENCE OF INFECTION AFTER FLAP BREAST RECONSTRUCTION

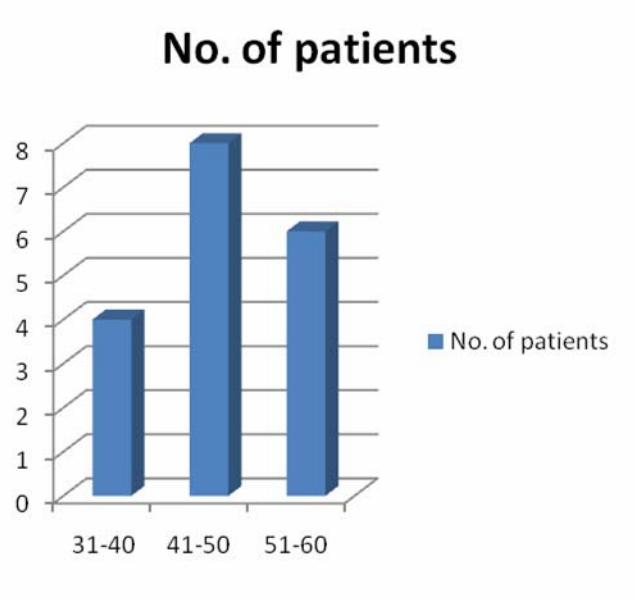
Author, Year	N	Technique	Infection Incidence
Hartrampf, 1987	383 breasts	Pedicled TRAM flap reconstruction	2(0.6%)
Menke, 2001	121	LD flap + implant	2%
Roy, 1998	111	LD flap + implant (95%)	8%
Change, 2002	75	Extended LD flap without implant	5.3%
Schusterman, 1992	68 breasts	Pedicled TRAM or free TRAM flap	8% of pedicled, 10% of free TRAMP flaps

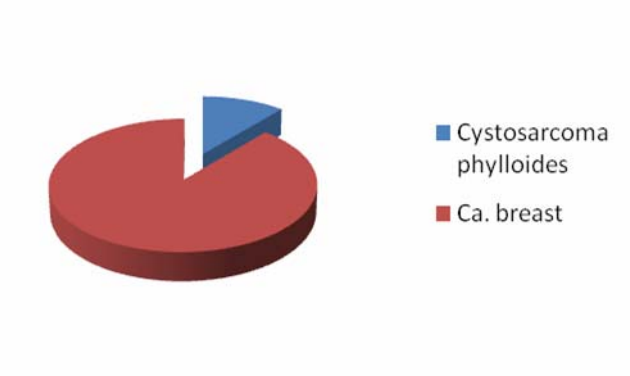
OBSERVATION & RESULTS

Total number of 18 patients were included in the study over a period of 34 months between july 2006 to april 2009.

AGE INCIDENCE:

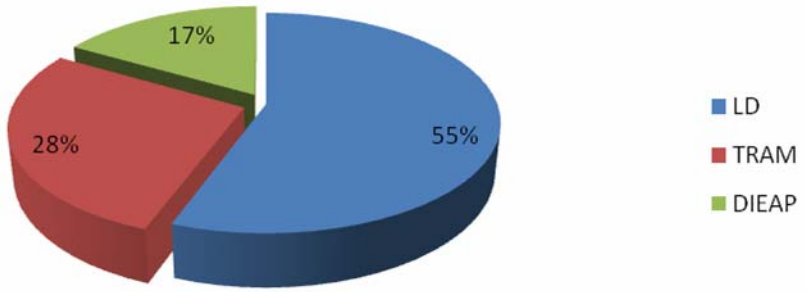
AGE	NO. OF CASES
31 – 40 years	4
41 – 50 years	8
51 – 60 years	6



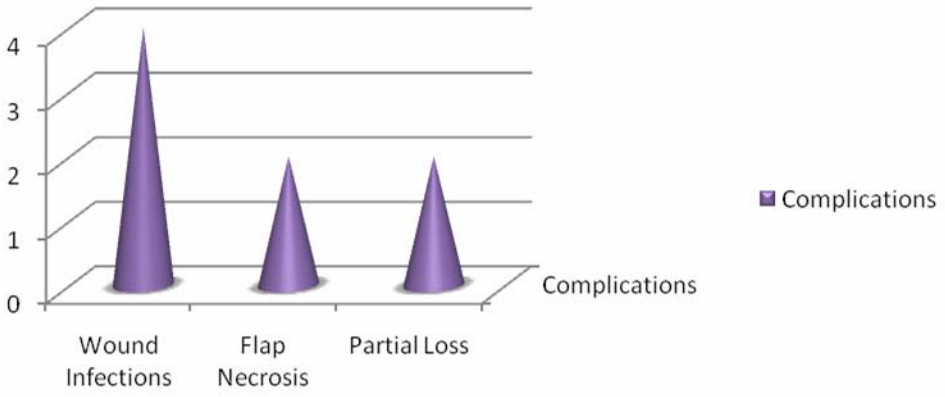


Sides ; Right & Left – Equal.

SURGICAL PROCEDURE



Complications



DISCUSSION

In our set up the patients who attended Government hospital, were mostly in an advanced stage of the disease. These people are not aware of the progression and prognosis of the disease and they also resort to native treatment and some rituals. Moreover people who come with early breast cancer are not willing for immediate reconstruction procedures. They just want to get rid of the disease and are not worried much about cosmetic problem. Hence they have to be convinced very much regarding immediate reconstruction which will be helpful for post operative radiotherapy and chemotherapy.

The local recurrence after surgical excision alone is 30%. Radiation therapy reduces local recurrence. Immediate post operative radiotherapy is dependant on the local tissue healing and type of tissue exposed to rt. Hence immediate breast reconstruction helps in post operative rt which can be gien at the earliest to avoid tumor spread after surgical handling.

Post implant chest wall irradiation increase the incidence of capsular contraction and implant exposure. Hence it was not done in our study.

Only stage II disease were selected to produce the post operative morbidity and for improving the results.

An analysis of the study resulted in the following points:

Patients who came with cancer breast were many, and of them 60% were only operable and only 20% were willing for immediate reconstruction inspite of explaining to them about autologous reconstruction of breast. Thus, only 18 patients were included in this study, out of which 10 patients under went LD FLAP, 5 patients TRAM FLAP and 3 patients DIEAP FLAP.

LD FLAP was convenient for the patient as well as for the surgeon as there was less extensive dissection and less duration of surgery and relatively nil donor site morbidity and the scar was acceptable, but the breast mound was small and needed implant for augmentation which was not done at present as the patients were not willing for another procedure immediately. Hence it was planned later. So also nipple areola reconstruction.

TRAM FLAP was done in obese patients to provide the added advantage of abdominoplasty and scar was hidden under the clothing, but the extensive dissection and the need for mesh repair were the disadvantage.

DIEAP FLAP required expertise on the part of the surgeon and also well trained microvascular team and equipment. The duration of surgery was also prolonged and patients with co morbid illness were not suitable for this flap. But the final result was superb giving a good breast mound in comparison with the tram flap, but with less dissection and doesnot require a mesh repair.

CONCLUSION

- Autologous breast reconstruction is superior to implants.
- Post operative chemo/RT can be given as early as possible after reconstruction to prevent tumor spread.
- Awareness of breast reconstruction should be stressed to the patients.
- LD FLAP is easier – breast mound small - needs prosthesis.
- TRAM FLAP – extensive dissection – needs abdominal mesh repair.
- DIEAP FLAP with the microvascular team is the best for breast reconstruction in terms of breast mound and donor site morbidity.
- All cases in our study had aesthetically acceptable results and were subjected to post operative RT/CT at the earliest than those who were without reconstruction.

PROFORMA

NAME: **PS No:**

AGE: **ADM No:**

SEX: **D.O.Adm:**

ADDRESS: **D.O.Surg:**

D.O.Dis:

Ph no:

PRESENTING COMPLAINTS:

HISTORY OF PRESENT ILLNESS

PAST HISTORY:

Co morbidity:

PERSONAL HISTORY

Smoker/ non-smoker

TREATMENT HISTORY

GENERAL EXAMINATION

CLINICAL EXAMINATION

PROVISIONAL DIAGNOSIS:

INVESTIGATIONS

FNAC

USG Breast

USG Abdomen

Mammography

Skeletal Survey

Blood Grouping & Typing

CBC

RFT

LFT

X-Ray Chest

ECG

TYPE OF SURGERY

TYPE OF FLAP

DURATION OF SURGERY

Amount of Blood transfusion

POST OP EVALUATION

Patient satisfaction

Patient depression

Pain

Flap Necrosis

Wound Infection

Donor site seroma

Pathological evaluation and oncological clearance

Duration to start chemotherapy

Chemotherapy compliance

Radiotherapy compliance

POST OPERATIVE

Breast Symmetry

Donor site

Flap

- Post Operative pain of patient was elicited by categorical scales of pain and visual analogue scales.
- Categorical Scales use words to describe the magnitute of pain. The patient pick the most appropriate word. The research group use four category Scale.[7]

Pain Intensity		**Score**	Visual analogues
Severe	:	3	Pain intensity Scale
Moderate	:	2	Least ---------- worst
Slight	:	1	
None	:	0	

The advantage of categorical scales that they are simple and quick.

Psychological evaluation was done based on Eysencks personality questionnaire and profile of mood states. The questionnaire contained 5 questions which included the mood profile. Each questions were given a score of 2 and maximum of score 10 was given.

Questionnaire and Scoring System

1) Do you now feel that you have lost your breast?
2) Does your reconstructed breast matches with your opposite breast?
3) Do you think that you can dress as previously before surgery?
4) Do you feel that you have lost your feminity?
5) Do you feel low when compared to other women?

Score : 0-2 – Poor 2-4 Fair 6-10 Good

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MASTER CHART

No.	Name	Age /sex	Ip no	Diagnosis	Surgical procedure	Flap result	Donor site	Inference
1	Rajeshwari	45/F	14818	Stage II rt. Ca. breast	MRM &LD flap cover	Well settled	Primary closure ,healed well	Excellent result
2	Mallika	39/F	5695	Stage II rt. Ca. breast	MRM &LD flap cover	Well settled	Primary closure ,healed well	Excellent result
3	Hema	32/F	73490	Cystosarcoma phylloids rt. breast	WLE & LD flap cover	Well settled	Primary closure ,healed well	Excellent result
4.	Selvi	45/F	65919	Stage II lt. breast	MRM & TRAM flap	Fat necrosis, partial	Primary closure ,healed well	Breast mound good. Wound infection
5	Mary	48/F	2418	Stage II lt. breast	MRM &LD flap cover	Well settled	Primary closure ,healed well	Excellent result
6	Jerina	30/F	25341	Stage II lt. breast	MRM & TRAM flap	Well settled	Primary closure ,healed well	Breast mound good.
7	Bagyalakshmi	50/F	10195	Stage II rt. Ca. breast	MRM &LD flap cover	Well settled	Primary closure ,healed well	Excellent result
8	Kannamma	46/F	17198	Stage II rt. Ca. breast	MRM & DIEAP flap	Flap necrosis	Primary closure, healed well	Necrosed flap debrided & SSG
9	Adilakshmi	52/F	61151	Stage II rt. Ca. breast	MRM & TRAM flap	Well settled	Primary closure, healed well	Excellent result
10	Chitra	30/F	74515	Cystosarcoma phylloids rt. breast	WLE & LD flap cover	Wound dehiscence	Primary closure, healed well	Wound infection
11	Srimathi	48/F	21555	Stage II rt. Ca. breast	MRM &LD flap cover	Well settled	Primary closure ,healed well	Excellent result
12	Lakshmi	42/F	28830	Stage II rt. Ca. breast	MRM &LD flap cover	Well settled	Primary closure ,healed well	Excellent result
13	Sarala	55/F	31620	Stage II lt. Ca. breast	MRM &LD flap cover	Well settled	Primary closure ,healed well	Donor site wound dehiscence - infection
14	Muniamma	55/F	20965	Stage II rt. Ca. breast	MRM & DIEAP flap	Well settled	Primary closure ,healed well	Excellent result
15	Jaishree	40/F	8010	Stage II lt. Ca. breast	MRM &LD flap cover	Well settled	Primary closure ,healed well	Excellent result
16	Lalitha	45/F	64801	Stage II lt. Ca. breast	MRM & DIEAP flap	Flap necrosis	Primary closure, healed well	Necrosed flap debrided & SSG
17	Devaki	50/F	11001	Stage II lt. Ca. breast	MRM & TRAM flap	Partial flap necrosis	Primary closure, healed well	Wound infection. Debrided primary suture.
18	Muthulakshmi	52/F	11715	Stage II lt. Ca. breast	MRM & TRAM flap	Well settled	Primary closure ,healed well	Excellent result